of the alimentary organs, but in other respects, as their defensive armature, remarkably specialized.

The two Old-World forms *Manidæ* and *Orycteropidæ* are so essentially distinct from all the American families, that it may even be considered doubtful whether they are derived from the same primary branch of mammals, or whether they may not be offsets from some other branch, the remaining members of which have been lost to knowledge.

Alphonse Milne-Edwards, in discussing the inferences to be derived from the study of the fœtal membranes of the Edentates[1], has maintained that one of two views must be accepted:—either that it shows that no value can be attached to the placentation in seeking natural affinities; or that the Edentates as we know them now are not a homogeneous order, but should be separated into several distinct natural groups. It is the latter view to which he gives the preference. It need scarcely be remarked that the observations made in the present communication lead to a similar conclusion.

2. On the Modification of a Race of Syrian Street-Dogs by means of Sexual Selection. By Dr. Van Dyck. With a Preliminary Notice by Charles Darwin, F.R.S., F.Z.S.

[Received April 4, 1882.]

Most of the naturalists who admit that natural selection has been effective in the formation of species, likewise admit that the weapons of male animals are the result of sexual selection—that is, of the best-armed males obtaining most females and transmitting their masculine superiority to their male offspring. But many naturalists doubt, or deny, that female animals ever exert any choice, so as to select certain males in preference to others. It would, however, be more correct to speak of the females as being excited or attracted in an especial degree by the appearance, voice, &c. of certain males, rather than of deliberately selecting them. I may perhaps be here permitted to say that, after having carefully weighed to the best of my ability the various arguments which have been advanced against the principle of sexual selection, I remain firmly convinced of its truth. It is, however, probable that I may have extended it too far, as, for instance, in the case of the strangely formed horns and mandibles of male Lamellicorn beetles, which have recently been discussed with much knowledge by W. von Reichenau[2], and about which I have always felt some doubts. On the other hand, the explanation of the development of the horns offered by this entomologist does not seem to me at all satisfactory.

[1] Annales des Sciences Naturelles, Zoologie, 6me série, tome viii. p. 6 (1879).

[2] "Ueber den Ursprung der secundären männlichen Geschlechtscharakteren &c.," Kosmos, Jahrgang v. 1881, p. 172.

In order to ascertain whether female animals ever or often exhibit a decided preference for certain males, I formerly inquired from some of the greatest breeders in England, who had no thoretical views to support and who had ample experience; and I have given their answers, as well as some published statements, in my 'Descent of Man'[1]. The facts there given clearly show that with dogs and other animals the females sometimes prefer in the most decided manner particular males—but that it is very rare that a male will not accept any female, though such cases do occur. The following statement, taken from the 'Voyage of the Vega,'[2] indirectly supports in a striking manner the above conclusion. Nordenskiöld says:—"We had two Scotch collies with us on the 'Vega.' They at first frightened the natives very much with their bark. To the dogs of the Chukches they soon took the same superior standing as the European claims for himself in relation to the savage. The dog was distinctly preferred by the female Chukch canine population, and that too without the fights to which such favour on the part of the fair commonly gives rise. A numerous canine progeny of mixed Scotch-Chukch breed has arisen at Pitlekay. The young dogs had a complete resemblance to their father; and the natives were quite charmed with them."

What the attractions may be which give an advantage to certain males in wooing in the above several cases, whether general appearance, such as colour and form, or vigour and strength, or gestures, voice, or odour, can rarely be even conjectured; but whatever they may be, they would be preserved and augmented in the course of many generations, if the females of the same species or race, inhabiting the same district, retained during successive generations approximately the same general disposition and taste; and this does not seem improbable. Nor is it indispensable that all the females should have exactly the same tastes: one female might be more attracted by some one characteristic in the male, and another female by a different one; and both, if not incompatible, would be gradually acquired by the males. Little as we can judge what are the characteristics which attract the female, yet, in some of the cases recorded by me, it seemed clearly to be colour; in other cases previous familiarity with a particular male; in others exactly the reverse, or novelty. With respect to the first appearance of the peculiarities which are afterwards augmented through sexual selection, this of course depends on the strong tendency in all parts of all organisms to present slight individual differences, and in some organisms to vary in a plain manner. Evidence has also been given in my book on Variation under Domestication showing that male animals are more liable to vary than females; and this would be highly favourable to sexual selection. Manifestly every slight individual difference and each more conspicuous variation depends on definite though unknown

[1] The Descent of Man, second edit. (1874), part ii. Chap. xvii. pp. 522–525. See also Chap. xiv., on choice in pairing shown by female birds, and on their appreciation of beauty.

[2] 'The Voyage of the Vega,' Eng. translat. (1881), vol. ii. p. 97.

causes; and these modifications of structure &c. differ in different species under apparently the same conditions. Statements of this nature have sometimes been misinterpreted, as if it were supposed that variations were indefinite or fluctuating, and that the same variations occurred in all species.

In reference to sexual selection, I will here only add that the complete manner in which the introduced dogs and other domestic animals in South America and other countries have been mongrelized, so that all traces of their original race have been lost, often appeared to me a surprising fact. This holds good according to Rengger[1] with the dogs even in so isolated a country as Paraguay. I formerly attributed this mongrelization merely to the breeds not having been kept separate and to the greater vigour of cross-bred offspring; but if the females often prefer strangers to their old companions, as seems to be the case, according to Nordenskiöld, in Siberia, and in Syria as shown in the following essay, then we can readily understand how rapid and complete would be the progress of mongrelization. I will now give without further comment the essay which Dr. W. Van Dyck, Lecturer on Zoology to the Protestant College at Beyrout, who has had excellent opportunities for observations during a residence of twenty years, has been so kind as to send me.

On the Modification of a Race of Syrian Street-Dogs by means of Sexual Selection. By W. Van Dyck, M.D.

Beyrout is one of the principal ports on the Syrian coast, and has a population of from eighty to one hundred thousand. Like most Oriental cities, its system of street-cleansing is far from perfect, and much of the scavenging is left to the street-dogs, many hundreds of which roam at large through the town and suburbs, picking up a subsistence as they best can. Twenty years ago, and previously, these dogs were quite a homogeneous race, the following being a rough description of a typical specimen:—height at shoulder, 20–22 in.; length from muzzle to root of tail 32–34 in.; length of tail, 12–15 in.; colour sandy grey, with some variety of shades (rarely so light as to pass for dirty white), in most cases distinctly darker above than beneath, and not unfrequently grizzled or brindled; head of medium size, with rather pointed snout and small pointed semipendulous ears; tail bushy, usually carried up over the back, sometimes much curled; general aspect decidedly jackal-like, or semi-wolfish; disposition cowardly, seldom savage. The only departures worthy of mention from the above type, at the time of which I write, were occasional black dogs, mostly with shorter hair than that of the sandy ones, rarely piebald black-and-white specimens. At the present date, the case is very different. The sandy-grey colour still prevails, it is true; but there is hardly an imaginable colour or combination of colours

[1] 'Naturgeschichte der Säugethiere von Paraguay,' 1830, p. 154.

which may not be found; and in form, size, and proportions of trunk and limbs, shape of head, form and size of ears, length and closeness of hair, length, bushiness, and carriage of tail there is nearly as much diversity.

Twenty years ago but few persons in this city owned dogs of any foreign breed whatsoever; but pointers, poodles, terriers, a few greyhounds and setters, and occasionally Newfoundlands, retrievers, and mastiffs have since been imported, and to some extent bred here. By far the majority of foreign dogs to be found in Beyrout at any time are smaller and decidedly weaker than the original natives; very few indeed can range the streets unaccompanied by their masters, without running a considerable risk of more or less serious injury from the street-dogs. Despite their marked muscular inferiority, however, the foreign dogs have succeeded in mongrelizing the whole race of street-dogs so thoroughly that it is now no easy matter to find one of these which does not bear unmistakable evidence of a foreign strain.

To account for this, I can confidently cite the following facts from my own personal observation and experience:—1st. Native bitches very often manifest a decided preference for certain foreign dogs; and I have repeatedly seen such a bitch reject, one after another, a train of kindred suitors, to accept without hesitation a thorough-bred pointer. My brother once owned a French pointer named Jack, quite small, but beautifully proportioned, and of a uniform golden fawn colour. This dog was so great a favourite with the opposite sex of the native breed, that he led an exceedingly "gay" life. Pointer bitches, on the contrary, not unfrequently refused him for the sake of a street-dog. 2nd. Pointers and other well-bred bitches are frequently so decided and persistent in their preference for street-dogs (usually for some particular individual, *unseen* it may be, but communicated with by the voice), that they will go barren whole seasons rather than accept mates chosen for them by their masters. In such cases, a moment's carelessness or inattention is sufficient to ensure a litter of mongrel pups, which, if not destroyed in puppy-hood, are very apt eventually to find their way into the street, there to multiply the chance of infection for the whole race. 3rd. Mongrel strains are most strongly pronounced in the suburbs, where street-dogs are rather less numerous than in the heart of the city, and where sly and runaway matches are favoured by hedgerows, shrubbery, &c. &c. In the city itself, on the contrary, where the chances are ten to one that claims will be settled by the law of battle, the foreign taint is not so evident; indeed a casual observer might easily overlook it in many instances; and if any pure-blooded representatives of the old stock are still in existence, it must be in the most thickly stocked quarter, where butcher's shops are many and very near together and street-dogs proportionately numerous.